

What is claimed is:

1. A retractable screen mechanism for covering an opening, the retractable screen mechanism comprising:

two tracks mounted on opposing sides of the opening,

a screen comprising a screen material mounted on a frame having two flexible opposing sides corresponding to and adapted to engage the two tracks,

a spool mechanism extending between the flexible opposing sides and engaging a third side of the frame, the screen being adapted to wind up on the spool mechanism, the spool mechanism being biased to the wind up position,

the spool mechanism having a speed reducer comprising a resistance structure moving through a viscous fluid to reduce the speed of the biased screen when moving to the wind up position.

2. The retractable screen mechanism of claim 1 further comprising a latch mechanism mounted to a fourth side of frame opposite the third side, the fourth side extending between the two flexible opposing sides, the latch mechanism engaging a corresponding latching mechanism mounted on the corresponding side of the opening to latch the screen in an extended position.

3. The retractable screen mechanism of claim 1 wherein the spool mechanism comprises an elongated housing having a U-shaped profile and a rotating axle contained therein and a plate partially covering the open side end of the elongated housing, the elongated housing and the plate defining a slot, the third side of the screen extending through the slot to engage the axle, the axle engaging a spring mechanism at one end thereof, the spring mechanism being biased to hold the screen in the wind up position, the speed reducer being mounted at the other end of the axle.

4. The retractable screen mechanism of claim 3 wherein the speed reducer comprises a hollow housing having a shaft extending coaxially and rotatably mounted therewithin, the resistance structure being a plurality of vane blades extending laterally from the shaft to the sidewall of the housing, the viscous fluid being contained within the housing, the housing being mounted to and rotating with the axle, the shaft extending outwardly from the housing, the shaft being fixedly mounted to prevent rotation thereof, whereby the housing rotates about the shaft.

5. The retractable screen mechanism of claim 4 wherein the viscous material is a hydraulic oil.

6. The retractable screen mechanism of claim 4 wherein a plurality of ribs extend inwardly from the housing to add turbulence to the flow of the viscous fluid to increase the resistance thereof.

7. The retractable screen mechanism of claim 6 wherein each of the plurality of ribs are bent slightly in one direction to further increase turbulence.

8. The retractable screen mechanism of claim 4 wherein the vane blades curve away from a radial orientation in one direction to further increase turbulence.

9. The retractable screen mechanism of claim 3 wherein the speed reducer comprises a housing having a cap at one end thereof and a jackscrew rotatably received within the housing, the jackscrew having one end extending through the cap, the housing being filled with the viscous fluid,

a disk having one or more tabs which ride in one or more tracks within the interior of the housing, the disk being rotatably received on the jackscrew and traveling upwardly and downwardly along said jackscrew as the jackscrew rotates.

10. The retractable screen mechanism of claim 9 wherein the housing is mounted and rotates with the axle, the one end of the jackscrew being fixedly mounted, the housing rotating about the fixedly mounted jackscrew.

11. The retractable screen mechanism of claim 1 wherein the screen material is a fabric.

12. A retractable screen mechanism for covering an opening, the retractable screen mechanism comprising:

two tracks mounted on opposing sides of the opening,

a screen comprising a screen material mounted on a frame having two flexible opposing sides corresponding to and adapted to engage the two tracks,

a spool mechanism extending between the flexible opposing sides and engaging a third side of the frame, the screen being adapted to wind up on the spool mechanism, the spool mechanism being biased to the wind up position,

a latch mechanism mounted to a fourth side of frame opposite the third side, the fourth side extending between the two flexible opposing sides, the latch mechanism engaging a corresponding latching mechanism mounted on the corresponding side of the opening to latch the screen in an extended position,

the spool mechanism having a speed reducer comprising a resistance structure moving through a viscous fluid to reduce the speed of the biased screen when moving to the wind up position, the spool mechanism comprising an elongated housing having a U-shaped profile and a rotating axle contained therein and a plate partially covering the open side end of the elongated housing, the elongated housing and the plate defining a slot, the third side of the screen extending through the slot to engage the axle, the axle engaging a spring mechanism at one end thereof, the spring mechanism being biased to hold the screen in the wind up position, the speed reducer being mounted at the other end of the axle.

13. The retractable screen mechanism of claim 12 wherein the speed reducer comprises a hollow housing having a shaft extending coaxially and rotatably mounted therewithin, a plurality of ribs extend inwardly from the housing to add turbulence to the flow of the viscous fluid to increase the resistance thereof, each of the plurality of ribs being bent slightly in one direction to further increase turbulence, the resistance structure being a plurality of vane blades extending laterally from the shaft to the sidewall of the housing, the vane blades curving away from a radial orientation in one direction to further increase turbulence, the viscous fluid being contained within the housing, the housing being mounted to and rotating with the axle, the shaft extending outwardly from the housing, the shaft being fixedly mounted to prevent rotation thereof, whereby the housing rotates about the shaft.

14. The retractable screen mechanism of claim 12 wherein the speed reducer comprises a housing having a cap at one end thereof and a jackscrew rotatably received within the housing, the jackscrew having one end extending through the cap, the housing being filled with the viscous fluid,

a disk having one or more tabs which ride in one or more tracks within the interior of the housing, the disk being rotatably received on the jackscrew and traveling upwardly and downwardly along said jackscrew as the jackscrew rotates, the housing being mounted and rotating with the axle, the one end of the jackscrew being fixedly mounted, the housing rotating about the fixedly mounted jackscrew.

15. A speed reducer for use in retractable screen systems, the speed reducer comprising a resistance structure moving through a viscous fluid to reduce the speed of the biased screen when moving to the wind up position.

16. The speed reducer of claim 15 comprises a hollow housing having a shaft extending coaxially and rotatably mounted therewithin, the resistance structure being a plurality of vane blades extending laterally from the shaft to the sidewall of the housing, the viscous fluid being contained within the housing, the housing being mounted to and rotating with the axle, the shaft extending outwardly from the housing, the shaft being fixedly mounted to prevent rotation thereof, whereby the housing rotates about the shaft.

17. The speed reducer of claim 16 wherein a plurality of ribs extend inwardly from the housing to add turbulence to the flow of the viscous fluid to increase the resistance thereof.

18. The speed reducer of claim 17 wherein each of the plurality of ribs are bent slightly in one direction to further increase turbulence.

19. The speed reducer of claim 16 wherein the vane blades curve away from a radial orientation in one direction to further increase turbulence.

20. The screen reducer of claim 15 wherein the speed reducer comprises a housing having a cap at one end thereof and a jackscrew rotatably received within the housing, the jackscrew having one end extending through the cap, the housing being filled with the viscous fluid,

a disk having one or more tabs which ride in one or more tracks within the interior of the housing, the disk being rotatably received on the jackscrew and traveling upwardly and downwardly along said jackscrew as the jackscrew rotates.

20. The speed reducer of claim 19 wherein the housing is mounted and rotates with the axle, the one end of the jackscrew being fixedly mounted, the housing rotating about the fixedly mounted jackscrew.